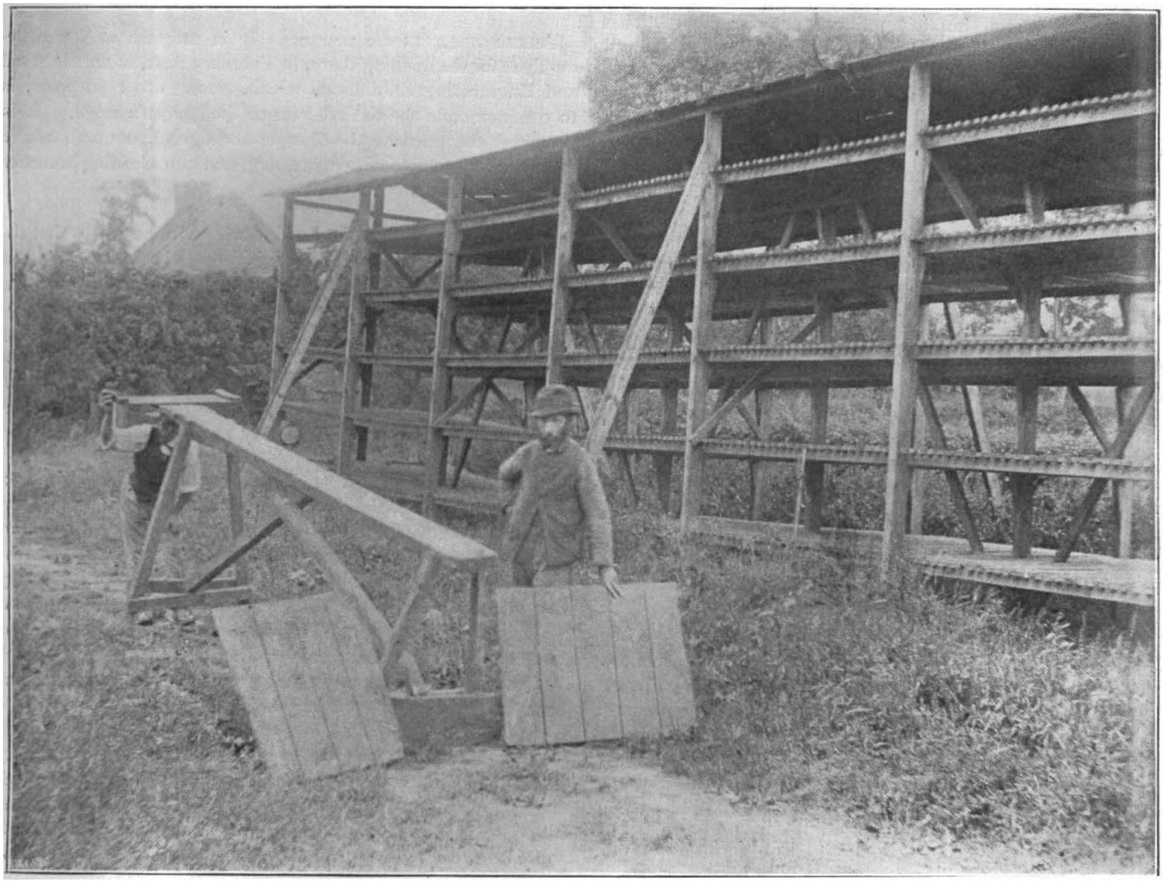
The whole construction was evidently framed with a view to cheapness and simplicity, so as to be easily removable. In the palmy days of the industry the sheds were not permanent erections, but were moved about from one place to another, so as to be near the crops.

We content ourselves with recording the bare facts without comment or criticism. Any science that lurks behind this ancient manufacture has been found out empirically, and handed down by tradition from a remote past. The imaginative person may indulge his fancy by carrying back the woad industry to that period when the early inhabitants of this country furnished that solitary scrap of personal information which is still the historical stock-in-trade of the average schoolboy. It may be well, however, to point out in this connection that *Isatis tinctoria* appears not to be a native of Britain.[1] We were told that in former times the woad-men were limited to certain families, and that they had traditional chants of their own; but these are passing into oblivion, and we were unable to ascertain the words.[2] The object of drying the pulp first, and then wetting it again before allowing it to ferment, is not at first sight obvious, nor could we learn why this practice has been found advantageous. The fermentation itself is no doubt a zymolytic decomposition of glucosides. The use of woad as a source of indigo is now very limited, being confined to some of the old-fashioned Yorkshire dye-houses, where it is used in conjunction with indigo in the so-called "woad vat," a description of which will be found in any work on dyeing.

FRANCIS DARWIN.
R. MELDOLA.



Woad Mill at Parson Drove. Two "balling-horses" are shown in front; between them is the "firm," from the further end of which a man is lifting one of the trays on which the balls are carried to the "ranges"; the latter are shown on the right

NOTES.

THE Royal Society's medals have this year been adjudicated by the President and Council as follows:—The Copley medal to Prof. Carl Gegenbaur, For.Mem.R.S., for his researches in comparative anatomy, and especially in the history of the vertebrate skeleton; the Rumford medal to Prof. Philipp Lenard, and also to Prof. Wilhelm Conrad Röntgen, for their investigation of the phenomena produced outside a highly exhausted vacuum tube through which electrical discharge is taking place; a Royal medal to Sir Archibald Geikie, F.R.S., on account of the great value and importance of his many original contributions to geology; a Royal medal to Prof. Charles Vernon Boys, F.R.S., for his invention of quartz fibres and investigation of their properties, his improvement of the radio-micrometer and investigations with it, for developments in the art of instantaneous photography, and for his determination of the value of the constant of attraction; the Davy medal to

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[1] In the "Flora of the British Islands" (ed. 1870), Hooker says: "The ancient Britons stained themselves with this plant; later the Saxons imported it." Can it be that even at that remote period the British colour industry could not hold out against continental competition?

[2] A verse is recorded by Miss Peckover in the article in *Aunt Judy's Annual* volume for 1883, p. 549.

Prof. Henri Moissan (of Paris), for the isolation of fluorine and the use of the electric furnace in the preparation of refractory metals; the Darwin medal to Prof. Giovanbattista Grassi (of Rome), for his most important discoveries, especially on matters directly related to Darwin's speculations. Her Majesty has signified her approval of the award of the Royal medals.

WE find the following piece of news in the *Pall Mall Gazette*:—"Prof. Koch and Dr. Kohlenistock, the German bacteriological experts, are to leave Southampton on the 14th inst., in the *Dunottar Castle*, for the Cape. They are being sent out by the German Government to inquire into the plague of rinderpest, and to report what measures are best in their opinion to prevent it spreading to the German South-west African Colonies. The Cape Government is giving every facility to the Commission." Nothing could better show the vast difference which exists between the British and German Governments in relation to all questions of science. We were informed some time ago, by one upon whom implicit reliance can be placed, that some years ago, long before the devastating rinderpest crossed the Zambesi, the Foreign Office was warned of its serious nature, and it was pointed out at the same time that the proper step to be taken was to send out a competent man of science to investigate it, in order that some means might be found to stop it. The Foreign Office declined to take any action in the matter.

AT first sight it might appear that such a question as the election of the President of the Royal Academy is beyond our purview; but there is one point about it, which makes it needful for us to refer to it. The Royal Society and Royal Academy are the bodies in this country to whom is entrusted the duty to look after the highest interests of science and art respectively. It is necessary that in the case of both bodies the office-bearers should be chosen among those whose leadership is beyond question. The distinct affirmation by the Academicians by their selection of the new President, that excellence in art is the chief point they have to consider, should not be without reflex action in our scientific bodies, first among which is our Royal Society. With some of the minor societies excellence in science is oftentimes one of the last things to be considered.

THE following is a list of those who have been recommended by the President and Council of the Royal Society for election into the Council for the year 1897 at the anniversary meeting on November 30:—President: Sir Joseph Lister, Bart. Treasurer: Sir John Evans, K.C.B. Secretaries: Prof. Michael Foster, Prof. Arthur William Rücker. Foreign Secretary: Dr. Edward Frankland. Other names of Members of the Council (the names of new members are printed in italics): *Prof. William Grylls Adams*, *Prof. Thomas Clifford Allbutt*, *Prof. Robert Bellamy Clifton*, *William Turner Thiselton-Dyer*, *C.M.G.*, *Prof. James Alfred Ewing*, Lazarus Fletcher, Dr. Walter Holbrook Gaskell, *Prof. Alfred George Greenhill*, Dr. William Huggins, Prof. Charles Lapworth, Major Percy Alexander MacMahon, R.A., *Prof. Raphael Meldola*, *Prof. William Ramsay*, *The Lord Walsingham*, *Prof. Walter Frank Raphael Weldon*, Admiral William James Lloyd Wharton, C.B.

SIR JOSEPH LISTER and Prof. Michael Foster have been elected honorary members of the Asiatic Society of Bengal, as successors to Huxley and Pasteur.

PROF. PENZIG, of Genoa, has started on a botanical expedition to Buitenzorg, Singapore, and Ceylon. The editorship of *Malpighia* is in the meantime undertaken by Prof. Pirotta, of Rome.

PROF. HUGO DE VRIES has been appointed Director of the Botanic Garden in Amsterdam, in the place of Dr. Oudemans.

THE German Fisheries' Association has offered a prize of 600 m. for the best essay on the history of development and the vital conditions of *Leptomitus lacteus*, with especial reference to its appearance and disappearance in impure water. The essays are to be sent in to Prof. Weigelt, 90/91 Zimmerstrasse, Berlin, S.W., by May 1, 1897.

THE Republic of Mexico, at the beginning of October, adopted the metric system of weights and measures for use throughout the country as a legal system.

A RUN of motor cars from London to Brighton will take place on Saturday, November 14, when the new regulations with respect to the use of light locomotives on highways come into force. The vehicles will assemble at the Hôtel Métropole, and are expected to start at 10.30 a.m., Mr. Henry J. Lawson, President of the Motor Car Club, leading the way. Fifty-four cars have been entered for the trip.

ARRANGEMENTS are now actively in progress at Newcastle-on-Tyne for the opening there, in February next, of an Electrical and Engineering Exhibition, which, among other purposes, is to commemorate the sixtieth year of the Queen's reign. It is proposed to illustrate the changes and developments that have taken place in electrical, engineering, and other leading branches of industry since 1837.

THE College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about 180 dollars, will be made on July 14, 1897, provided that an essay deemed by the Committee of Award to be worthy of the prize, shall have been offered. Essays intended for competition may be upon any subject in medicine, but must not have been published, and they should be received by the Secretary of the College on or before May 1, 1897.

A REUTER telegram from Stockholm announces the death of Prof. Hugo Gylden, the eminent astronomer, at the age of fifty-five. After studying at the University of Helsingfors, his native town, he entered the Observatory at Pulkova, where he was the pupil of Struve. In 1871 he became Director of the Observatory in Stockholm, and, after thirteen years, was appointed to a similar post in Göttingen. He was a member of the Stockholm Academy of Science, a corresponding member of the French Institute, and an officer of the Legion of Honour. His numerous works have made his name very familiar to astronomers.

THE opening meeting of the 143rd Session of the Society of Arts will be held on Wednesday evening, November 18, when an address will be delivered by Major-General Sir Owen Tudor Burne, K.C.S.I., Chairman of the Council. The subject of the address will be "India, its Arts, Manufactures and Commerce." At the subsequent meetings before Christmas, the following papers will be read:—"Recent Developments in Mechanical Road Carriages," by W. Worby Beaumont; "The Teaching of Economics," by W. A. S. Hewins; "Mining at Great Depths," by Bennett H. Brough.

THE *Kew Bulletin* announces that the Government of Zanzibar have decided to appoint a Director, and have selected Mr. Robert N. Lyne for the post. The new Director informs Mr. Thiselton-Dyer that the object of the Government in creating the post is to improve, where possible, the methods under which the agriculture of the country is now carried on, and to endeavour by experiment to discover some new product that may to a certain extent take the place of cloves. The Government desire that the work so admirably begun by Sir

John Kirk when he was Consul General there, and since interrupted, may be continued.

AT a meeting of the Royal College of Physicians held on Friday last, a Committee was appointed to consider and report to the college on the desirability of including the subject of bacteriology in the course of study and examination for the college licence. The members of the Committee are—Dr. Pavy, Dr. Church, Sir Dyce Duckworth, Dr. Ord, Dr. Poore, and Dr. Washbourn. At the same meeting, Sir William Roberts was announced as the Harveian Orator for 1897; and it was decided that the sum of 1000*l.*, presented by Captain E. Wilmot Williams, with the object of perpetuating the memory of the late Dr. Bisset-Hawkins in connection with the college, be utilised for the purpose of establishing a gold medal to be presented by the college. The medal will be awarded triennially to some duly-qualified medical practitioner who is a British subject, and who has during the preceding ten years done such work in advancing sanitary science, or in promoting public health, as in the opinion of the college deserves special recognition.

A PRIZE of £50, to be called the Welby Prize, is offered for the best treatise upon the following subject: "The causes of the present obscurity and confusion in psychological and philosophical terminology, and the directions in which we may hope for efficient practical remedy." Competition is open to those who, previously to October 1, 1896, have passed the examinations qualifying for a degree at some European or American university. The Committee of Award will consider the practical utility of the work submitted to them as of primary importance. The essays, which may be written in English, French, or German, must be type-written, and extend to at least 25,000 words. They should be headed by a motto, and accompanied by a sealed envelope containing the name of the writer. Manuscript from America should be sent to Prof. E. B. Titchener, Cornell University, Ithaca, N.Y., and must reach its address not later than October 1, 1897.

MR. FRANCIS GALTON traces, in the *Fortnightly Review*, a hypothetical discovery of a system of signalling from the planet Mars, and shows how a succession of signals, divided into dots, dashes, and lines of light according to their duration, might be interpreted. Savages can communicate with one another by gestures, deaf mutes by the movements of the lips, and criminals by alphabetical tappings upon the walls of their cells. Mr. Galton shows how, by a kind of Morse code, the Martians could first signal to us the summation of numbers, such as $2 + 3 = 5$, $3 + 3 = 6$, and also the results of multiplication and division. He does not consider the view of the fourth dimensionists, that possibly there are worlds where $2 + 2 = 3$. After the arithmetical rules had been signalled, the supposition is that the relative distances of the planets from the sun were flashed to the earth; then the relation between the circumference and diameter (π); then the area of the circle (πr^2); then the names of a number of regular polygons, with the number of sides and area of each. Granting that the Martians were able to make themselves clear so far, they could develop a system of picture-writing. With three varieties of signal, twenty-seven combinations would be possible, and each could represent a particular word or sign. Each side of a polygon with twenty-four sides could, therefore, have a name of its own, and each one would have a definite bearing or direction with reference to the others. All is now plain sailing. The Martians signal the symbols of a number of sides, and, as each is received, a line is drawn in a particular direction. From the formula thus obtained, a picture can be reproduced, as Mr. Galton showed at a Royal Institution lecture in 1893 (see NATURE, vol. xlvii. p. 342). The conclusion is that intelligible messages are possible between planets sufficiently near together for signalling purposes.

IN our last issue appeared an abstract of the presidential address delivered by Mr. J. Wolfe Barry, C.B., F.R.S., to the Institution of Civil Engineers, which now numbers nearly 7000 members of all classes. Under the altered by-laws the session of the Civil Engineers commences on the first Tuesday in November, and lasts exactly six months, ending on the last Tuesday in April. By a supplemental Charter, obtained in March last, the number of the Council has been extended in order that all engineering interests, both at home and in the colonies and India, may be fully represented on that body, while corporate members have been given the power of voting for the election of the Council without the necessity of being present at the annual general meetings, a condition which had practically debarred the majority of the members from voting at all. During the past year some important changes in the staff of the Institution have taken place. Mr. James Forrest, who has been connected with the society for fifty-four years, has retired from the post of Secretary, his successor being Dr. Tudsbery. Mr. Forrest has been appointed Honorary Secretary; while the retiring Honorary Secretary, Dr. W. Pole, F.R.S., has been, by a special vote of the Institution, enrolled in the distinguished list of Honorary Members. The following medals and premiums have been awarded by the Council to the authors of papers dealt with during the session 1895–96:—Telford medals and premiums to H. Riall Sankey, late Captain R.E.; Prof. J. A. Ewing, F.R.S., J. O. Arnold, G. H. Hill, and F. E. Duckham; Telford medal and Manby premium to the Hon. R. C. Parsons; Watt medals and Telford premiums to Jeremiah Head, Dr. E. L. Corthell, and C. F. Jenkin; George Stephenson medals and Telford premiums to G. F. Deacon, W. Adams, and W. F. Pettigrew; Telford premiums to John Dewrance and A. F. Bruce; Manby premiums to B. Donkin and Alan Brebner; Crampton prizes to Hammersley Heenan, W. Gilbert, T. Wrightson, H. F. Parshall, and D. T. Jarintzoff, Imperial Russian Navy; Trevithick premiums to A. W. Szlumper and C. A. Rowlandson; and Miller prizes to W. O. Leitch, jun., A. S. Butterworth, E. S. McDonald, S. Thow, J. Scott, J. Andrew, and M. De Ville.

MR. SHELDON JACKSON has filed, at Washington, a report of the condition of affairs in Alaska. Among items of interest are the statement that the Government herd of reindeer has increased in number to 1091; of which 337 are young of the present year, that have not attained sufficient maturity to enable them to endure the rigors of winter. The weather last winter was exceptionally severe, a temperature of −87° having been noted at one point, and −20° having been sustained for a period of several weeks.

NUMBERS of swallows were seen skimming over the river Test, at Mottisfont, Hampshire, on Monday, November 2. Mr. W. C. Worsdell, who imparts this information, says they sometimes rose forty or fifty feet in the air, but for the most part they remained near the surface of the water. Probably this behaviour at a late season induced the old naturalists to think that swallows hibernated beneath the water. On October 27, Mr. Worsdell observed house-martins flying to and fro over Kew Gardens; and on November 1, they were seen flying high in air above the New Forest. Mr. S. Stainer, writing from Southampton, says he saw five swallows briskly flying a little before sunset on November 6.

A RAPID photographic printing machine was shown by Mr. Friese Greene at the Royal Society Conversazione in May last (see NATURE, vol. liv. p. 37). A roll of rapid bromide paper was fed in at one end of the machine, and finished prints were turned out at the other end at the rate of two or three thousand an hour. In a recent number of the Russian *Photographic Review*, a description is given of the establishment of Arthur Schwartz, at Berlin, where illustrations for magazines are printed by this method. The bromide paper generally employed is 100 centimetres wide and a kilometre long. Sometimes a width of 450 centimetres is used, and full-size photographs of men on horseback have been produced. If the negative from which prints are required is much less than 100 cm. wide, a row of them is arranged; and in this way forty thousand copies of cabinet photographs have been printed and finished ready for distribution in ten hours. Our Russian contemporary gives a photograph printed by the new method, and it is really a very brilliant picture. It is stated that the twelve hundred copies required for the embellishment of the *Review* were absolutely identical in tone and detail.

IN a recent paper communicated to the Academia dei Lincei, G. Folgheraiter describes a curious method he has devised for obtaining the approximate value of the dip in ancient times, and hence deducing the value of the secular variation. In previous papers he has shown that clay, if baked in a magnetic field, becomes permanently magnetised in such a way that its magnetic axis coincides with the direction of the magnetic field. Hence by measuring the direction of the permanent magnetism of clay articles, the date of manufacture of which is known, and on the assumption that they were placed in a certain position when baked, to deduce the value of the dip. With a view of testing the value of this method, a series of preliminary experiments have been made, by baking a number of cylinders and cones of clay in a furnace which was quite free from iron, the test-pieces being placed in positions the relation of which to the direction of the earth's magnetism were carefully noted. After cooling the baked clay test-pieces were placed, with their axes east and west, at a certain distance from a magnetometer, and from the magnitude of the deflections produced when the objects are rotated into different positions, the direction of the permanent magnetism is deduced. The author reserves an account of the results for a future paper.

ATTENTION has lately been directed to the surgical uses of oxygen gas, the treatment consisting essentially in the exposure of affected parts to the action of the gas, either pure or diluted with purified air. An account of some remarkable results obtained by this means is given in a recent number of the *British Medical Journal*, by Mr. George Stoker. Examinations of the bacteriological conditions of affected parts before and after treatment, show that oxygen has a selective action in reference to micro-organisms in the wounds, destroying some and encouraging the growth of others. In all healthy and rapidly healing wounds certain micro-organisms regarded as favourable to recovery are found, while others are regarded as unfavourable micro-organisms. Whatever may be the connection between the organisms and the state of a wound or sore, it seems to be established that when, in a wound treated by oxygen, healing is arrested or retarded, there is always a corresponding decrease of favourable and increase of unfavourable micro-organisms. If the strength of the oxygen bath be increased when this condition arises, the character of the micro-organisms from the wound is entirely reversed. Oxygen thus encourages the growth of micro-organisms characteristic of healing wounds, with the result that a cure is rapidly effected. A long and varied experience of the oxygen treatment has led Mr. Stoker to conclude that the method heals in less time than any other form of treatment, allays pain, stops foul discharges, forms a healthy new skin, and is far more economical and less expensive than any other form of treatment, both as regards suffering and money.

TO the *Revue Générale des Sciences*, of October 15, Dr. Bernard Renault contributes an interesting article entitled "Les Bactéries et leur œuvre Géologique," in which he comes to the following conclusions: (1) That the bones, shells, and teeth of animals in Primary times were infested and destroyed by bacteria, analogous in their form and size to those which, at the present day, produce caries. (2) That formerly the remains of plants were invaded by multitudes of bacteria, some attacking the membranous cellular tissue, and others the thicker portions. Some of the bacteria acted more particularly upon the spores contained in the sporangia of ferns; the parenchymatous tissue first disappearing, then the woody fibres, and finally the cells of the epidermis. (3) That if nothing occurred to arrest the progress of bacteria, every part of plants would disappear successively, and only numerous colonies or zoogloea formed by micro-organisms would remain visible. (4) That these zoogloea often served as centres of attraction for mineral matters, amorphous or crystalline, thus producing oolitic or spherulitic structures in rocks. (5) That coal contains considerable quantities of bacteria, which, by causing the formation of hydrogen and carbonic acid, have brought cellulose and its derivatives to the chemical composition of this combustible." (Even during the preparation of his article, Dr. Renault found micrococci and bacilli in coal from Saint Étienne, Commentry and Vicoigne, in Tertiary coal, and in the coal of Transylvania.) Dr. Renault suggests that the work of bacteria, which goes on in marshes, ponds, &c., was stopped by the rising of water, frequent in Primary times, and capable of carrying away plants, having undergone a more or less complete transformation in lakes of a certain extent, into seas where fermentation became impossible owing to their depth. The physical properties of coal—density, hardness, tenacity, &c.—have, therefore, he concludes, only appeared as the result of a slow compression at the centre of a permeable medium, the compression being due to the various layers which covered the coal.

PROF. H. B. DIXON and H. Brereton Baker have investigated the influence of Röntgen rays on some chemical actions, but from their note, published in the *Transactions* of the Chemical Society, it appears that the results have hitherto been negative. The effect was tried on mixtures of carbon monoxide and oxygen (dried and moist), hydrogen and oxygen, carbon monoxide and chlorine, hydrogen and chlorine, and, lastly, hydrogen sulphide and sulphur dioxide (dried). No combination, either explosive or gradual, occurred between the gases exposed. The combination of chlorine with carbon monoxide and with hydrogen is effected by light, but the addition of Röntgen rays did not alter the rate of combination. Although the rays cause electric discharge from metallic bodies, they appear to have no effect on electrolysis. The action on a photographic plate is probably caused either directly or by the fluorescence of the film. It is not due to fluorescence of the glass, because the deposit of silver takes place entirely on the side of the film exposed to the rays.

THE Royal Meteorological Institute of the Netherlands has recently published a volume containing interesting *Mededeelingen*, or extracts from the log-books of Dutch ships navigating various parts of the world. The extracts include noteworthy phenomena relating to atmospheric electricity, unusual disturbance of the compass needle, volcanic eruptions and earthquakes, icebergs, &c. The first edition of this work appeared in 1867; in the twenty-nine years which have elapsed, a large amount of material has accrued, which made it desirable to recast the whole work, rather than issue a supplementary volume. It may be worth noting that the present work also contains a discussion of meteorological observations made on the Congo, and particulars relating to a few places on the coast of Lower Guinea.

IN the *Indian Meteorological Memoirs*, vol. vi. part iii., 1896, Mr. J. Eliot publishes an important discussion of the hot winds of Northern India. The chief features of the air movement in the hot weather months of March, April, and May are: (1) A feeble motion during night time, increasing rapidly to about 2h. p.m., and, under favourable conditions, blowing almost with the force of a gale during the next two or three hours; (2) intense dryness and excessive temperature, in which the humidity occasionally falls as low as two or three per cent., and the shade thermometer ranges between 105° and 115°; (3) clouds of dust, which give a peculiar reddish glare to the sunlight. Mr. Eliot shows, from careful comparisons of hourly observations of the various elements, that the more important features of the hot winds are practically identical with the winds of the cold weather months, the difference of their characteristics being chiefly due to the altered climatic conditions of the period.

THE United States Naval Observatory stands in a reservation of seventy acres. The magnetic buildings are on a small knoll surrounded by a deep ravine, and the only disturbances to which the magnetic observations are subject arise from an electric railroad, trolley system, at a distance of 1375 feet from the instruments. The ravine appears to diminish the effect of the railroad, for neither the declination nor the horizontal force instrument shows evidence of disturbance, though the vertical force records are slightly affected. Appendix I. to Washington Observations, 1894, is devoted to the magnetic work at the Observatory during that year by Lieut. C. C. Marsh. All the records are tabulated in periods of 26·68 days, instead of the calendar months, the calendar followed being that drawn up by Prof. Frank Bigelow. This plan has been adopted with the view of further studying the relation between the sun and the earth's magnetism. Several plates accompany Lieut. Marsh's report; and among the subjects illustrated by them are the Observatory grounds and buildings, composite curves of declination and horizontal force, curves of diurnal variations of the magnetic elements, and curves of hourly and monthly disturbances of the declination.

THE atomic weight of magnesium has recently been redetermined with great care by Prof. Richards and Mr. Parker, of Harvard, and an account of their results appears in the current numbers of the *Proceedings of the American Academy of Sciences* and the *Zeitschrift für anorganische Chemie*. The previous determinations of the atomic weight of this element showed a remarkable inconsistency until the year 1884, when Marignac recorded the results of a large number of closely concordant experiments pointing to the number 24·37. The accuracy of this number has now been confirmed by Messrs. Richards and Parker. The method selected was the analysis of magnesium chloride. The salt was prepared, with great precautions, from the double magnesium and ammonium chloride by heating in a current of dry hydrogen chloride; it was then transferred to a weighing tube, without the possibility of contact with moisture, and the chlorine precipitated by silver nitrate, either gravimetrically or volumetrically. The results of four series of very concordant experiments give the number 24·362 as the atomic weight of magnesium when oxygen is taken as 16·00, or 24·179 if oxygen be taken as 15·88.

In the *Zeitschrift für Elektro-chemie* for October 5, Messrs. E. J. Constam and A. von Hansen describe the preparation of potassium percarbonate by the electrolysis of a solution of potassium carbonate. It may be assumed that the alkali carbonates, like the salts of other dibasic acids, dissociate in very concentrated solutions more or less completely into the ions $\overset{+}{M}$ and $\overset{-}{MHCO_3}$, the latter may, under favourable circumstances, combine, at the moment of their separation at the anode, to form a percarbonate. In order to test this view, the authors have electrolysed a strong solution of potassium carbonate. At ordinary temperatures oxygen is evolved at the anode, and potassium bicarbonate precipitated; as the temperature falls the evolution of oxygen slackens, and at −10° ceases almost entirely, a bluish amorphous powder appearing in place of the potassium bicarbonate. The best results are obtained with a saturated solution of potassium carbonate at temperatures not higher than −15°. The current density (from 1 to 300 ampères per square decimetre) appeared to have little effect on the yield. The bluish precipitate is rapidly decomposed by water at the ordinary temperature, and must, therefore, be rapidly filtered off, dried on porous porcelain, and finally over phosphorus pentoxide. It then forms a bluish white, amorphous, hygroscopic powder. It loses carbon dioxide and oxygen when heated; in ice cold water it dissolves without decomposition, but the solution evolves oxygen at the ordinary temperature. It liberates iodine from potassium iodide or hydriodic acid, oxidises lead sulphide to sulphate, decolourises indigo, reduces manganese and lead peroxides, and evolves oxygen when treated with silver oxide. Dilute solutions of caustic potash or of sulphuric acid decompose it with formation of hydrogen dioxide.

THE additions to the Zoological Society's Gardens during the past week include two Chacma Baboons (*Cynocephalus porcarius*, ♂ ♀) from South Africa, presented by Captain Baker; a Grand Galago (*Galago crassicaudata*)) from East Africa, presented by Mrs. Le Poer Richardson; a One-streaked Hawk (*Melierax monogrammicus*) from West Africa, presented by Mrs. Palmer; an Oyster-catcher (*Hæmatopus ostralegus*), European, presented by Miss Beatrix Martin; two Ortalan Buntings (*Emberiza hortulana*), British, presented by Mr. John Young; a Black-eared Marmoset (*Hapale penicillata*) from South-east Brazil, two Choughs (*Pyrrhocorax graculus*), British, deposited; two Black Swans (*Cygnus atratus*) from Australia, two Coscoroba Swans (*Cygnus coscoroba*) from Antarctic America, purchased.

OUR ASTRONOMICAL COLUMN.

MARS.—A Kiel telegram, dated November 11, gives us the following information. "Mars, Trivium Charontis double November 10. Flammarion."

Trivium Charontis is not a canal, but one of those "oases," as Lowell terms them. It forms the meeting point of no less than nine canals, namely: Orcus, Erebus, the twin Hades, Styx, Cambyses, Cerberus, Laestrygon and Tartarus. The observation above referred to is of importance in that Lowell seems never, as far as we know, seen them double. He defines them as being regular both in position and shape. When they form the point of intersection of single canals they appear as round spots, but in the case of double canals "they look like rectangles with the corners rounded off." The most striking case he noticed was the very oasis, Trivium Charontis, that is in question. Lowell found also that the oases "grew" as the canals appeared to grow, so that this observation of Flammarion may be of a special interest as regards the development of this, the largest Martian oasis.

EPHEMERIS FOR COMET PERRINE.—A postal card from Kiel, dated November 7, informs us of the elements and ephemeris of this comet for the ensuing week, computed by Prof. H. Kreutz from observations made on November 2, 4, and 6. These are as follows:—

$$T = 1897 \text{ February } 6\cdot819 \text{ Berlin Mean Time.}$$

$$\left.\begin{array}{rl} \omega = & 164^\circ\ 58'\cdot8 \\ \text{☊} = & 85\ \ 10\cdot2 \\ i = & 146\ \ \ 5\cdot4 \end{array}\right\} 1896\cdot0.$$

$$\log q = 0\cdot06722$$